

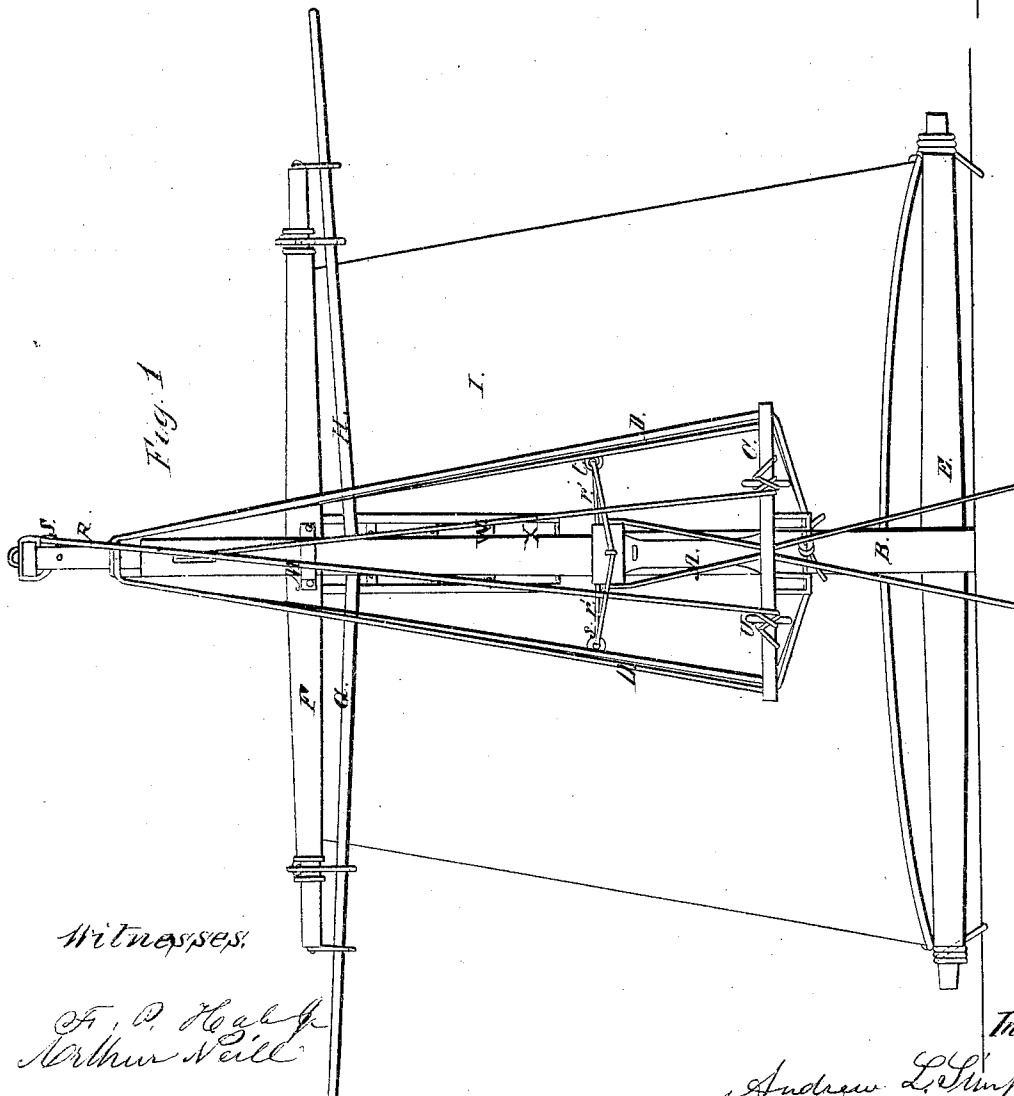
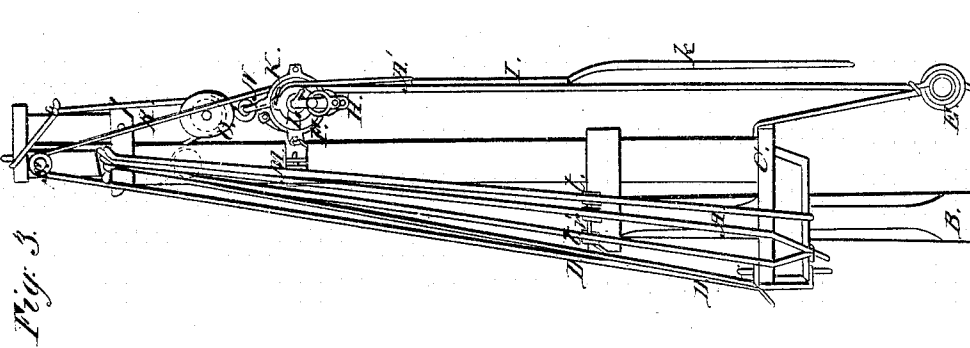
Sheet 1. 2 Sheets.

A. L. Simpson.

Reefing Top Sails.

N<sup>o</sup> 27,316.

Patented Feb. 28, 1860.



Witnesses:

F. P. Hall  
Arthur Neill

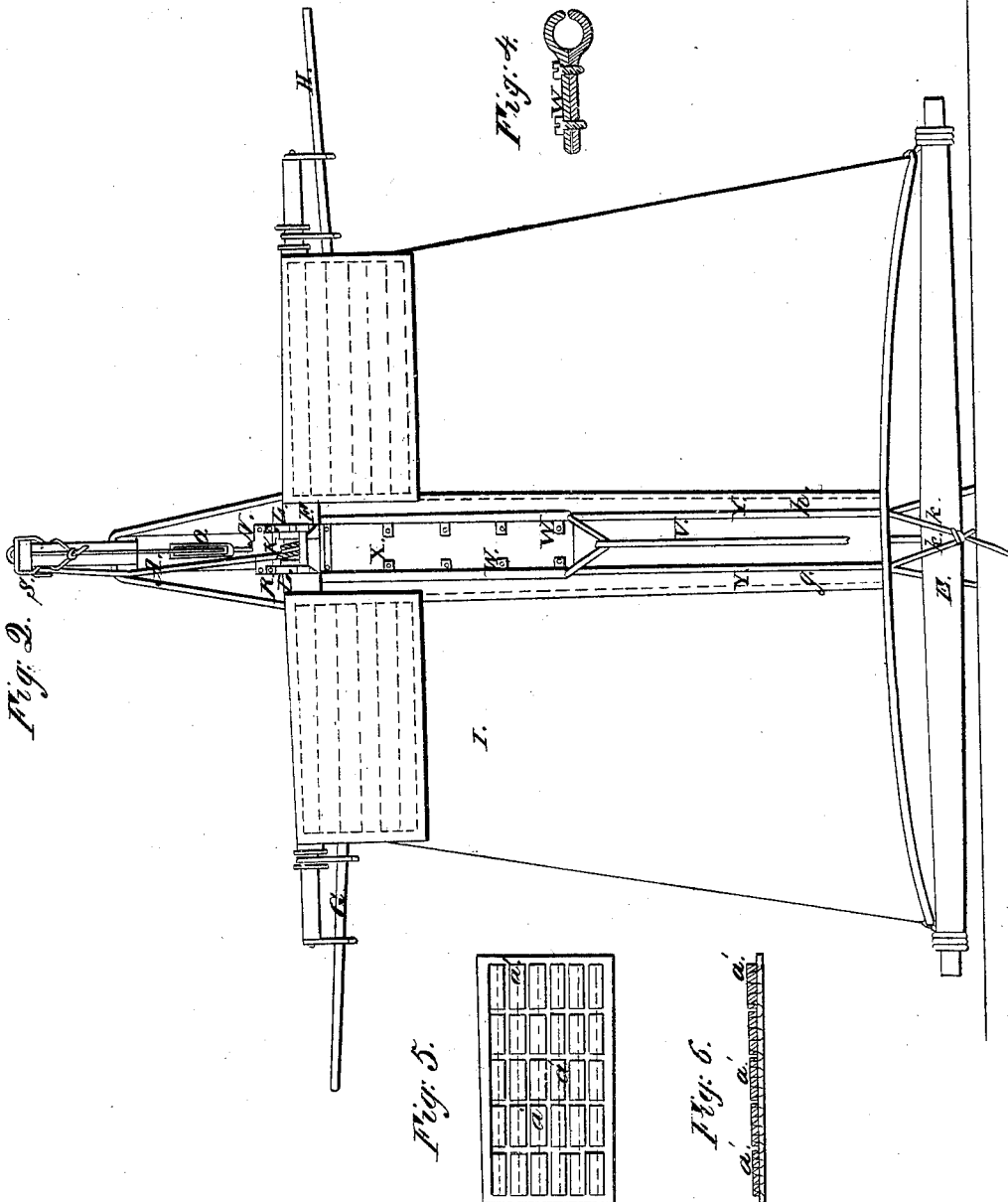
Inventor:

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# UNITED STATES PATENT OFFICE.

ANDREW L. SIMPSON, OF DURHAM, NEW HAMPSHIRE.

## REEFING SAILS.

Specification of Letters Patent No. 27,316, dated February 28, 1860.

*To all whom it may concern:*

Be it known that I, ANDREW L. SIMPSON, of Durham, in the county of Strafford and State of New Hampshire, have invented a new and useful Improvement in Mechanism for Reefing Topsails; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1 exhibits an aft elevation of a top-sail as applied to a topmast and having my improved reefing apparatus. Fig. 2 is a front elevation, and Fig. 3 is an edge view of the same. Fig. 4 is a horizontal section of one of the adjustable clasps or slides of the standing or folding flap or strip of the sail. Fig. 5 is a rear view, and Fig. 6 a horizontal section of the connected blocks applied to the sail of the yard as hereinafter described.

My invention is applicable to that mode of reefing a sail where the topsail yard while being lowered is made to revolve and wind the sail upon it.

In the drawings, A represents the topmast; B, the mast; C, the cap; D D, the shrouds; E, the lower yard; F, the topsail yard; G, H, top gallant studding sail boom; I, the topsail; K, the metallic barrel or cylinder of the topsail yard; L L, the suspension rings; M, a hoop to slide on the topmast and guide the yard F while being raised or lowered; N, is a suspension brail connecting the rings L, L; O, is the topsail yard tackle lift, while R, is a rope attached to and wound about the barrel K, and is either fastened to the topmast head or passes to and about a sheave S, at the topmast head, and is afterward belayed to a pin U.

In order that the sail may be wound upon the topsail yard, such sail is provided with a long slot or opening *v*, made downward through it about one half of its depth and directly below the barrel K. Such opening is made of a width a little greater than the length of the barrel K, and its opposite parallel sides are provided with guides or guide ropes, *g*, *h*, stitched or sewed to strips Y, Y, affixed by their outer edges to the sail, and continued from the top to the bottom of such sail. These ropes or guides are embraced by a series of adjustable clasps *w*, *w*, each of which is constructed in two parts and connected by one or more screws as shown in Fig. 4, each clasp being applied to its rope or guide so as to be capable of slid-

ing up and down thereon without slipping off the same. The several adjustable clasps are fastened to the strip of canvas X, having a width and length sufficient to entirely cover the opening or slot made through the sail, the strip being interposed between the two parts of each clasp and confined thereto by the connecting screw or screws. Should the clasp at any time bind on its guide rope, the connecting screw next to such rope may be turned back a little so as to enable the jaws of the clasp to separate sufficiently to allow the clasp to run easily in the guide. The strip X is thus capable of sliding up and down the sail from its top to its bottom and so as to cover or uncover the opening V, to such extent as occasion may require. The upper end of the strip is suspended from the two rings L, L, by means of a plate or T bar joined or hinged to them, and the said strip at its lower end has one or more ropes *z*, attached to and depending from it, the same being to enable the strip to be drawn downward upon its guides during the operation of reefing the sail.

From the above it will be seen, that when it may be desirable to reef a topsail it will only be necessary to let go the rope *o*. The weight of the yard and the sail hanging to it will then cause the yard to descend. In so descending it will pull upon the rope R, so as to unwind it from the barrel and thereby cause the barrel and yard to revolve in such manner as to wind the upper part of the sail about the yard and by so doing reef the sail. At any time afterward the reef may be taken out by simply pulling upon the rope *o* so as to raise the yard.

In winding the topsail around the topsail yard a difficulty has arisen in consequence of the yard being made tapering in opposite direction from the middle, such causing the sail to be wound close around the yard near the middle and very loosely or with much slack toward the ends of the yard. In order to overcome this difficulty, or in other words to cause the sail to be wound evenly about the yard, I apply to it and the yard a series of connected blocks or equivalents to roll about the yard with the sail, the same being shown at A', A', in the drawings. In carrying out the same, I make use of long blocks or bars of cork or other suitable material, preferring cork on account of its lightness and elasticity. These blocks, seen at *a'*, *a'*, *a'*, I arrange in

parallel courses or ranges upon and fasten to a sheet of canvas and so that there may be a short distance between each block and either of those against its sides or ends as shown in the figures. In this way the blocks by means of the strip of canvas become hinged or connected together. Each horizontal range of blocks should have its blocks gradually increase in thickness from the inner edge to the outer edge of the sheet to which they are connected. The upper edge of the sheet is to be fastened to the topsail yard along the upper edge of the sail, and so that when the topsail yard is being revolved it may wind both the sail and the sheets of connected blocks about the yard. As the sheet and their blocks are wound about the yard they take up the slack of the sail or cause the sail to be wound evenly about the yard. When the yards are braced around sharp either the topsail yard or the reefed part of the sail is liable to be brought into contact with the lee shrouds of the topmast, in which case either the sail or the topsail yard will be likely to become chafed. In order to prevent this I apply to the shrouds and the cap of the lower mast head one or more ropes or other suitable devices whereby the shrouds or ratlines may be drawn inward toward the topmast or out of the way of the topsail or the topsail yard. These ropes are shown at  $r'$ ,  $r'$ , as not only attached to the mast cap but rove through eyes  $s$ ,  $t$ , attached to the shrouds and the

cap, and from thence carried downward through the top and to or near the deck of the vessel. By pulling on the lower end of the lee rope when the shrouds are slack, as they will be when the yards are braced hard up, the shrouds may be drawn out of the way of the sail or the topsail yard so as to prevent either the yard or the topsail from being chafed by them.

I do not claim making the sail with an opening V, and providing such with a covering X, but

I claim—

1. The application of the connected blocks or equivalents to the sail and the topsail yard so as to roll about the yard with the sail substantially in manner and for the purpose as specified.

2. I also claim the adjustable clasp W, made in two parts and provided with a screw or screws for connecting them to the sail and adjusting them with reference to the guide rope as described.

3. I also claim the application of the covering strip X, to the top sail and its opening in such manner as to enable the said strip to be slid up and down on the sail and to or near to the foot thereof in manner substantially as described.

ANDREW L. SIMPSON.

Witnesses:

R. H. EDDY,  
F. P. HALE, Jr.